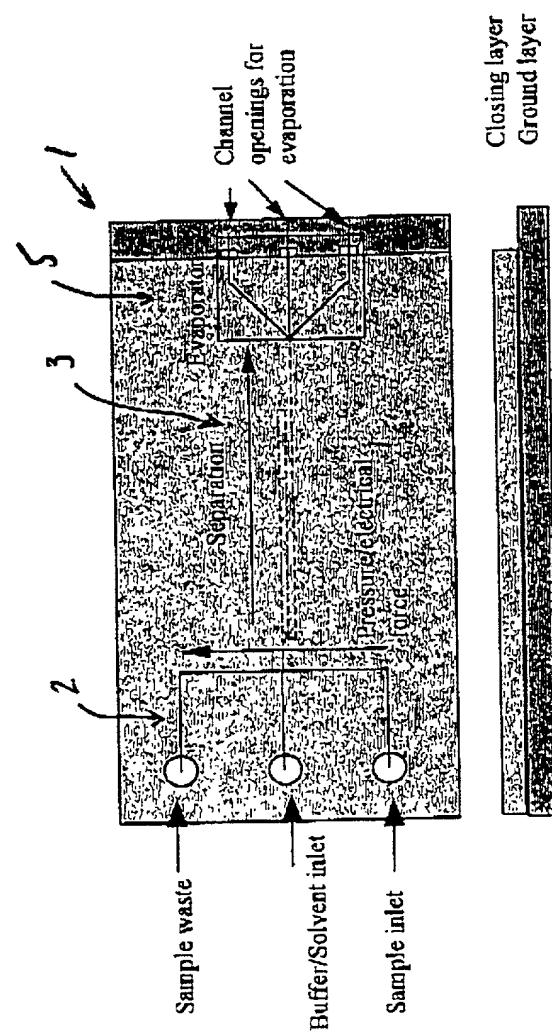


Fig.1 The increase in circumference is dependent on the relation between width vs. depth of a channel ($s = \text{width}/\text{depth}$). The cross section is constant. For example: A channel, which is 10 times wider than deep has an increase of more than 50% capillary force in comparison to a square one.



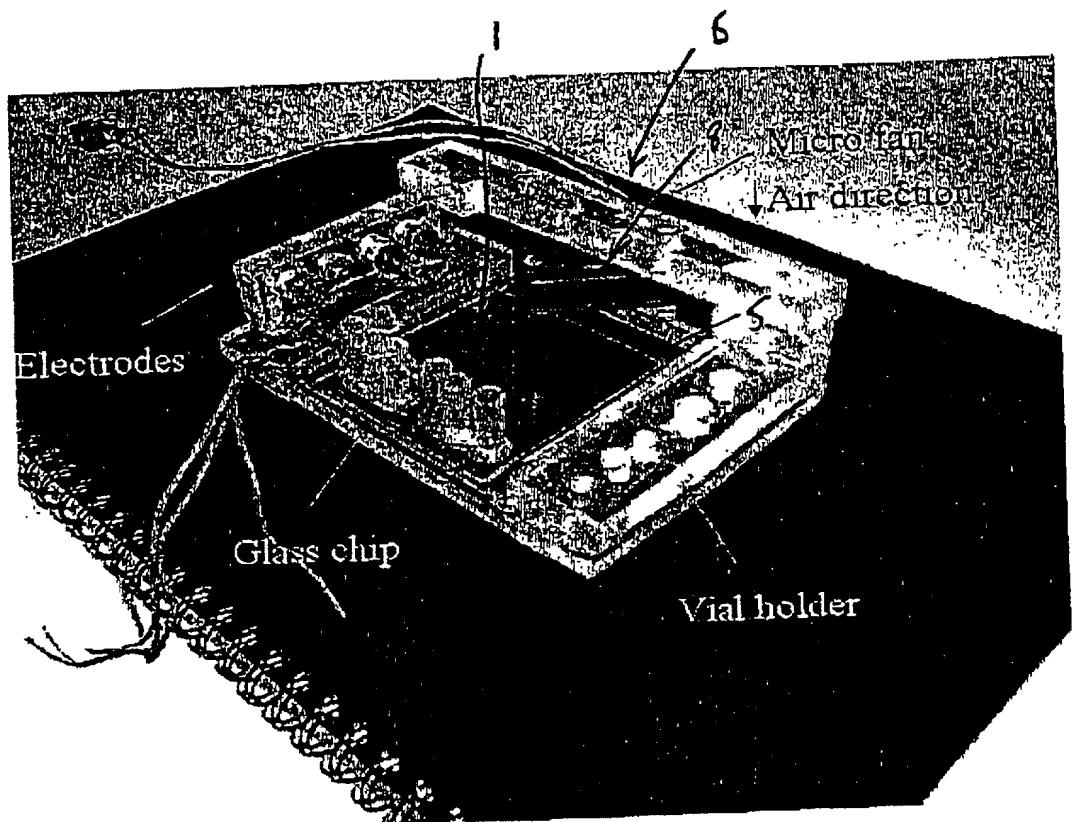


Fig. 3 Chip holder for 3in x 3in glass chips
compatible with standard microscope stages;
includes a micro fan for constant "fresh" air,
vial holders and electrodes for sample injection

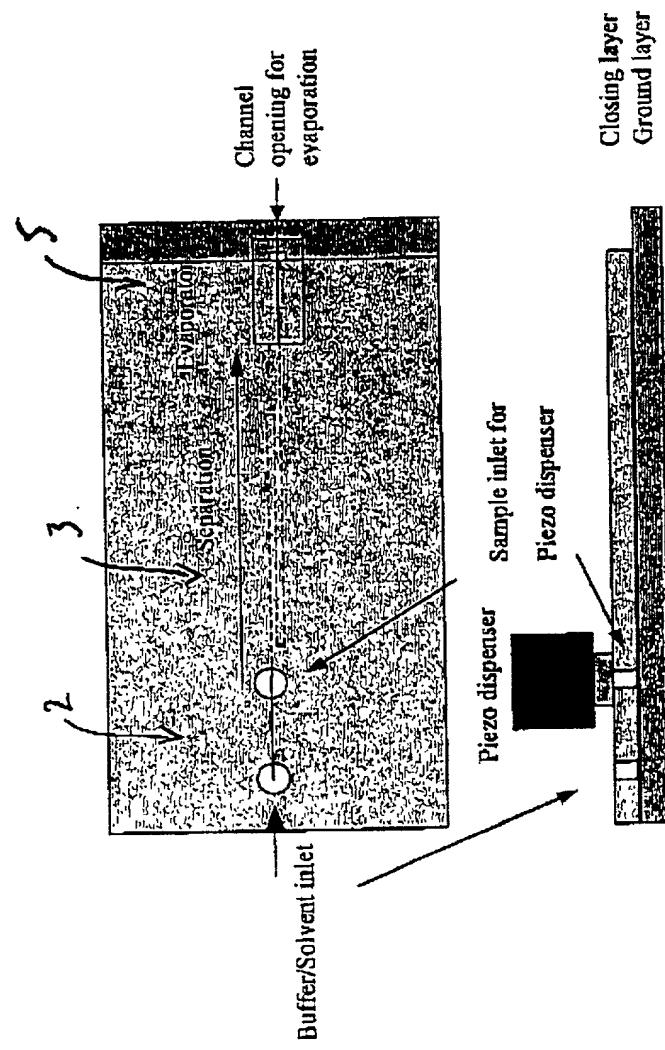
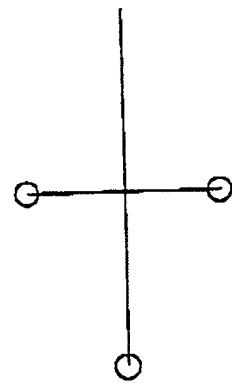


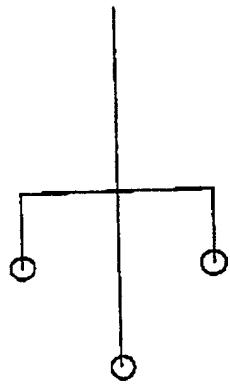
Fig. 4.

Inlets



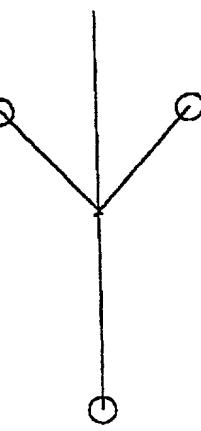
T-Inlet classic

Fig. 5(a)



T-Inlet, modified

Fig. 5(b)



T-Inlet, anti-stream

Fig. 5(c)

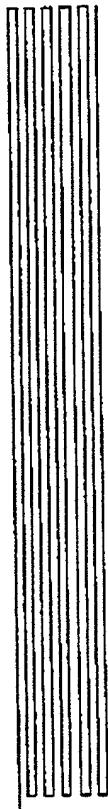


Inject-Inlet

Fig. 5(d)

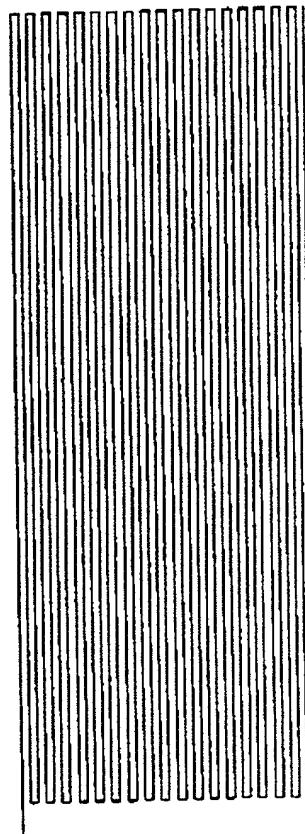
Separation Channel

Fig. 6 (a)



Single channel straight

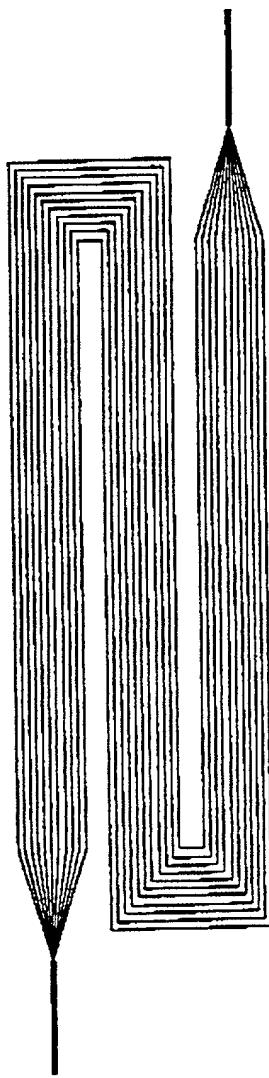
Fig. 6 (b)



Single channel meander

Fig. 6 (c)

Single channel meander extra long

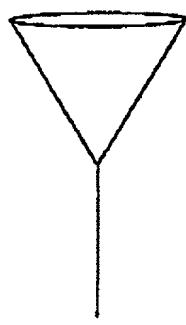


Channel bundle parallel, meander

Fig. 6 (d)

Evaporators

Single channel

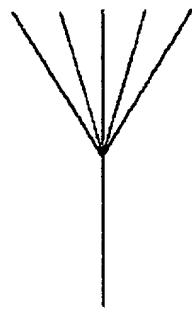


Funnel-shape

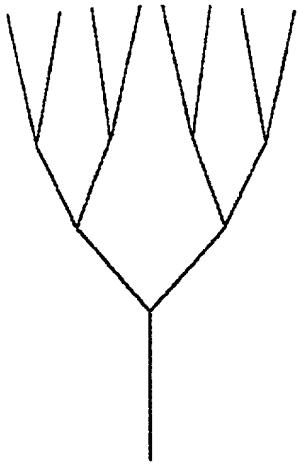
Fig. 7 (a)

Fig. 7 (b)

Multi Channel Evaporators



Umbel-Shape Fig. 8(a)



Root-Shape Fig. 8(b)

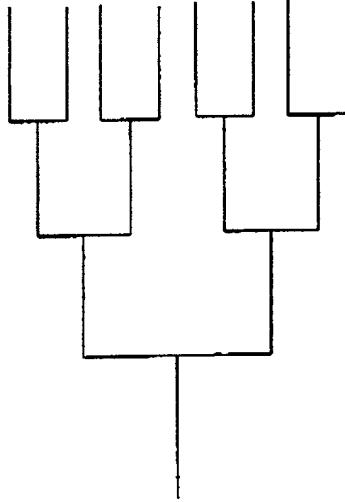


Fig. 8(c)

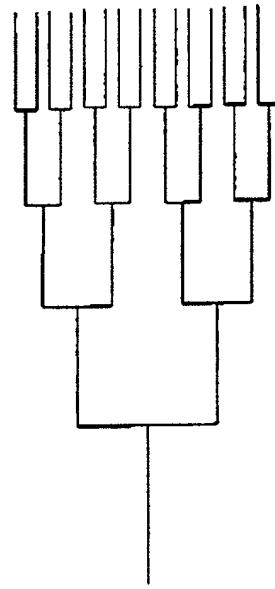
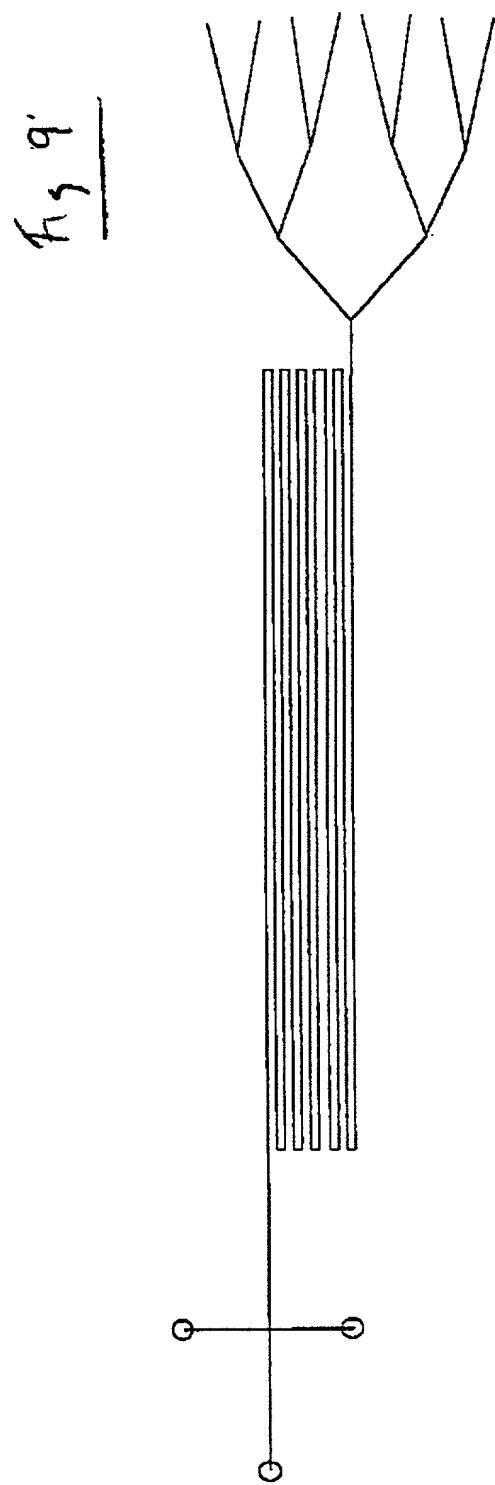


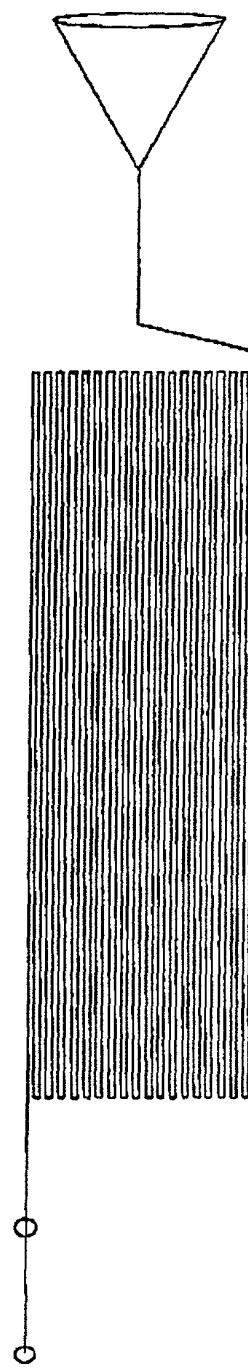
Fig. 8(d)

1:1 Splitter, rectangular 3-fold 1:1 splitter, rectangular 4-fold



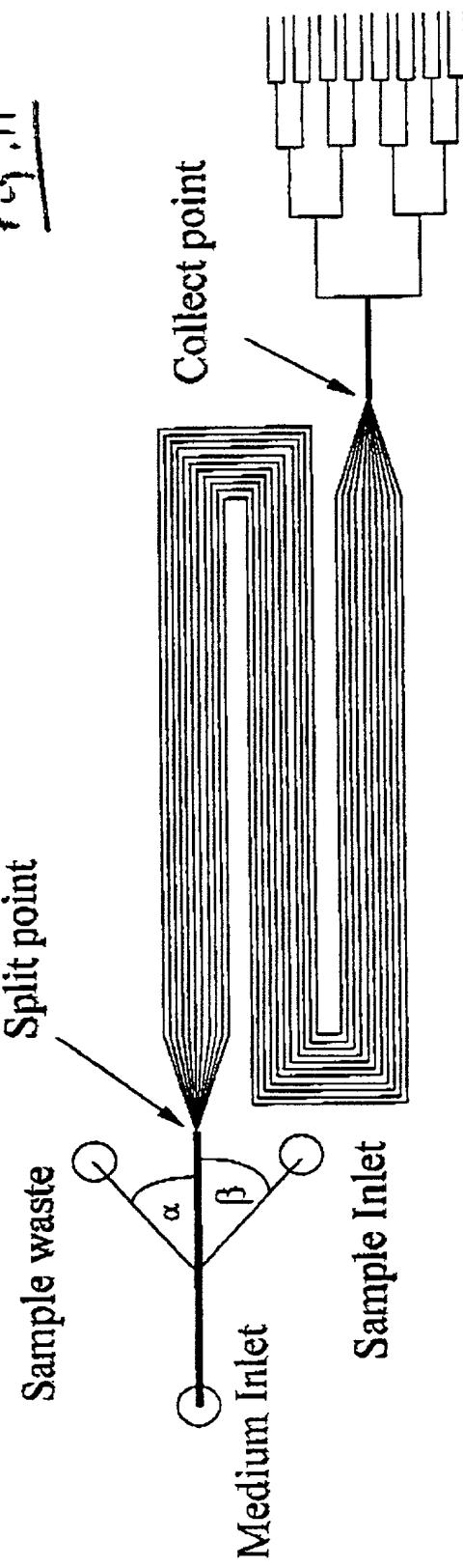
Chip design with classic T-inlet and medium length meander single channel
Separator including multi channel root-shape evaporator; all channel
dimensions a the same (10 μ m wide and 0.5 μ m deep)

Fig. 10.

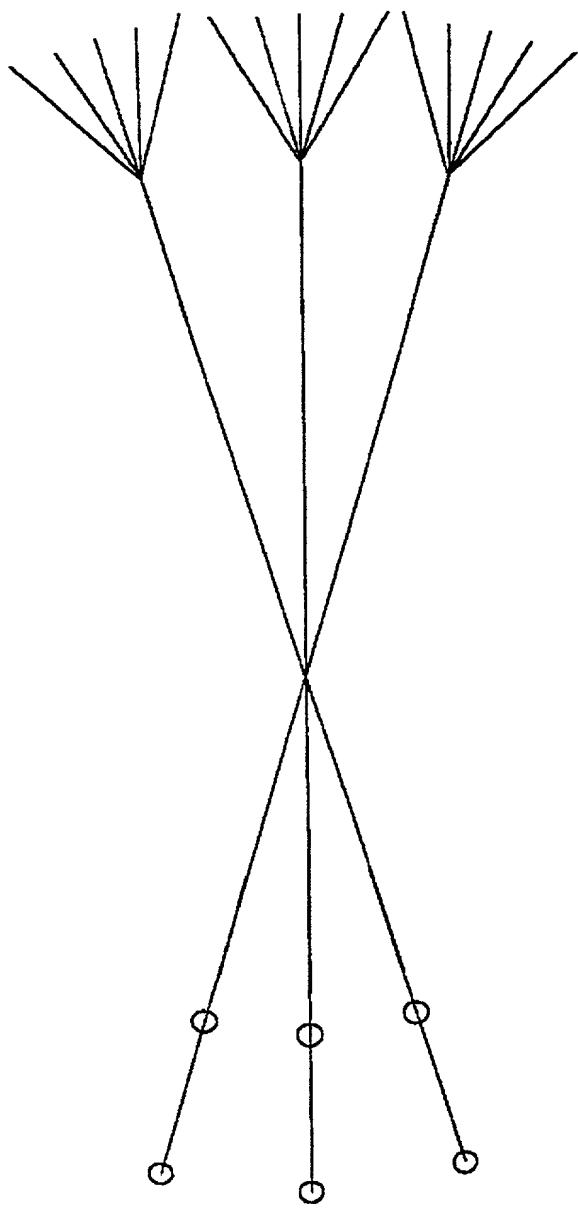


Chip design with inject-inlet including extra long single meander channel for separation; funnel-evaporator

Fig. 11

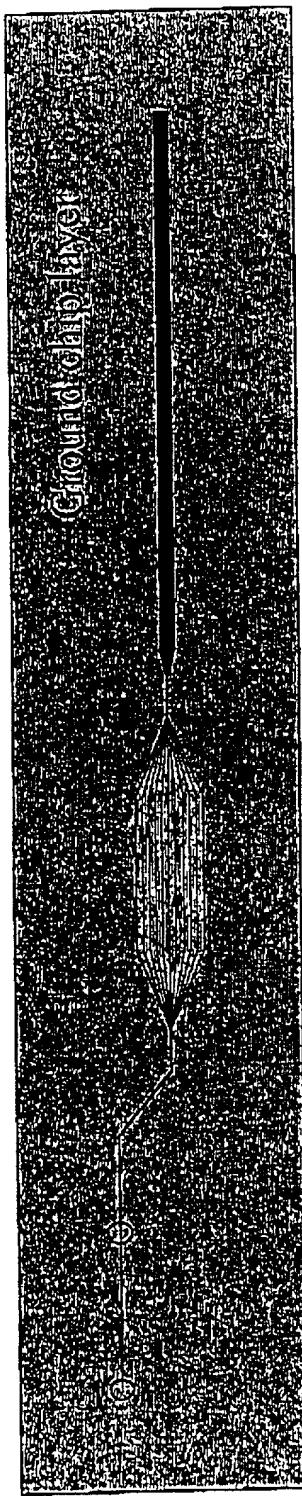


Chip design including an anti-stream inlet with different angles (α, β) for sample inlet and sample waste, channel dimensions vary between the different regions; bundle of 11 separation channels meandering parallel; evaporator 4-fold 1:1 splitter

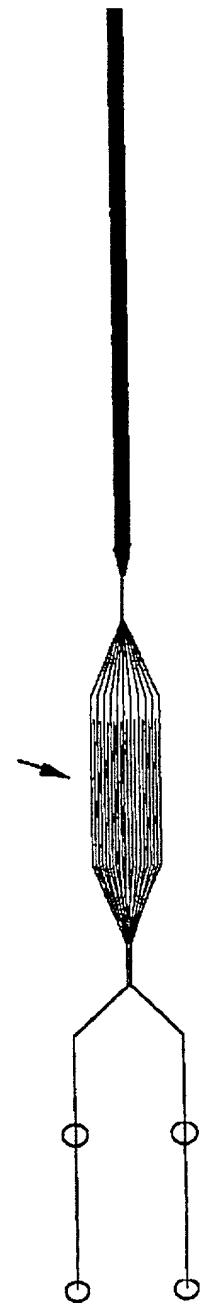


Chip design for a three compound synthesis including three umbel-shape evaporators and three inject-inlets

Fig. 12

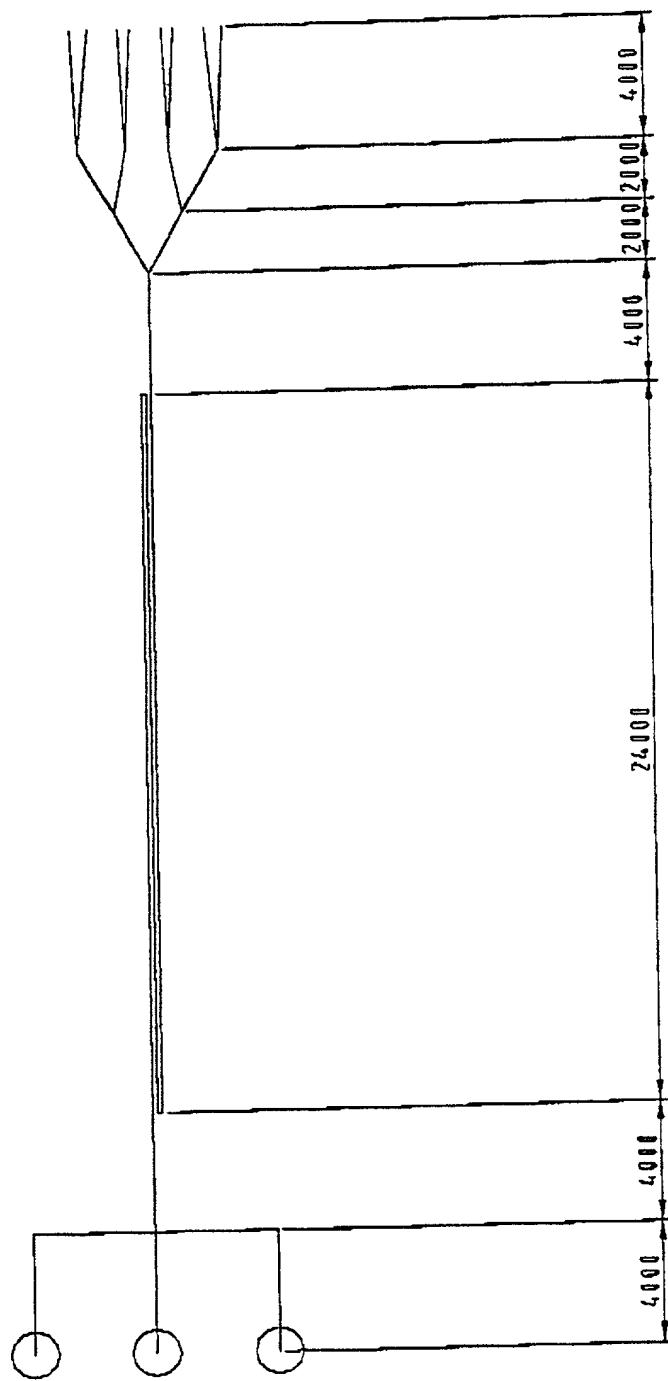


Bessoth-mixer



Chip design for Immuno-assays including two inject-inlets on two different layers and following "Bessoth-mixer"(Lit); single wide channel evaporator

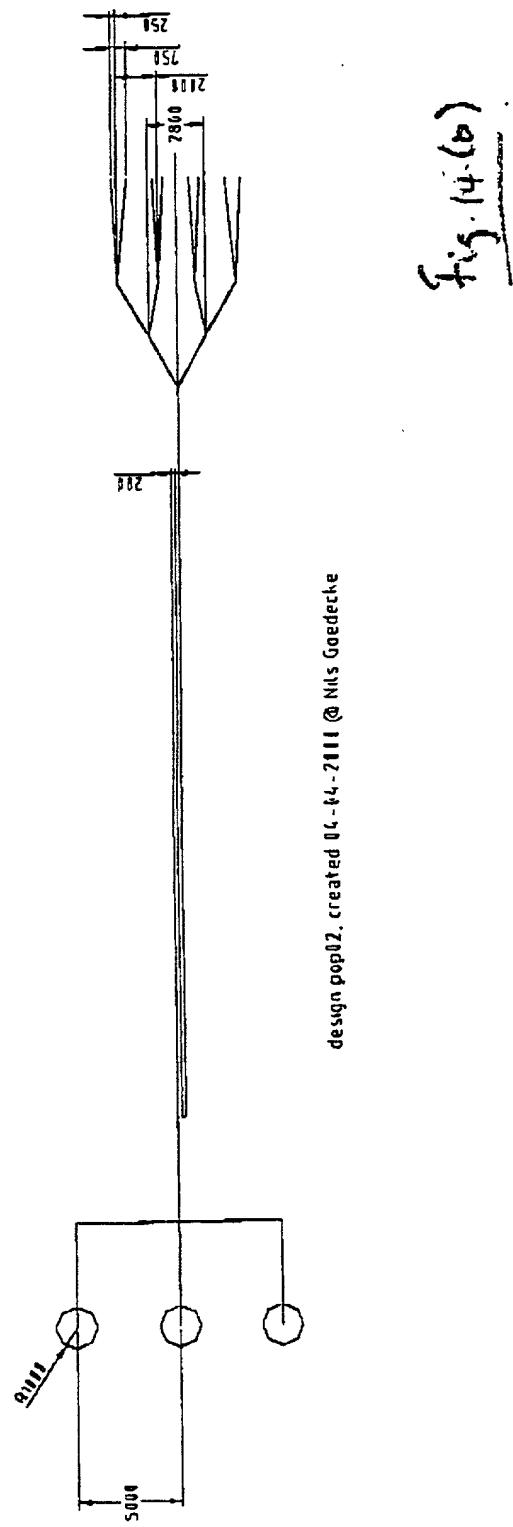
Fig. 13



design pop#2, created 04-04-2000 @ Nils Goedecke

Channel width 110 μm after etching, depth 25 μm over the whole structure

Fig. 14(a)



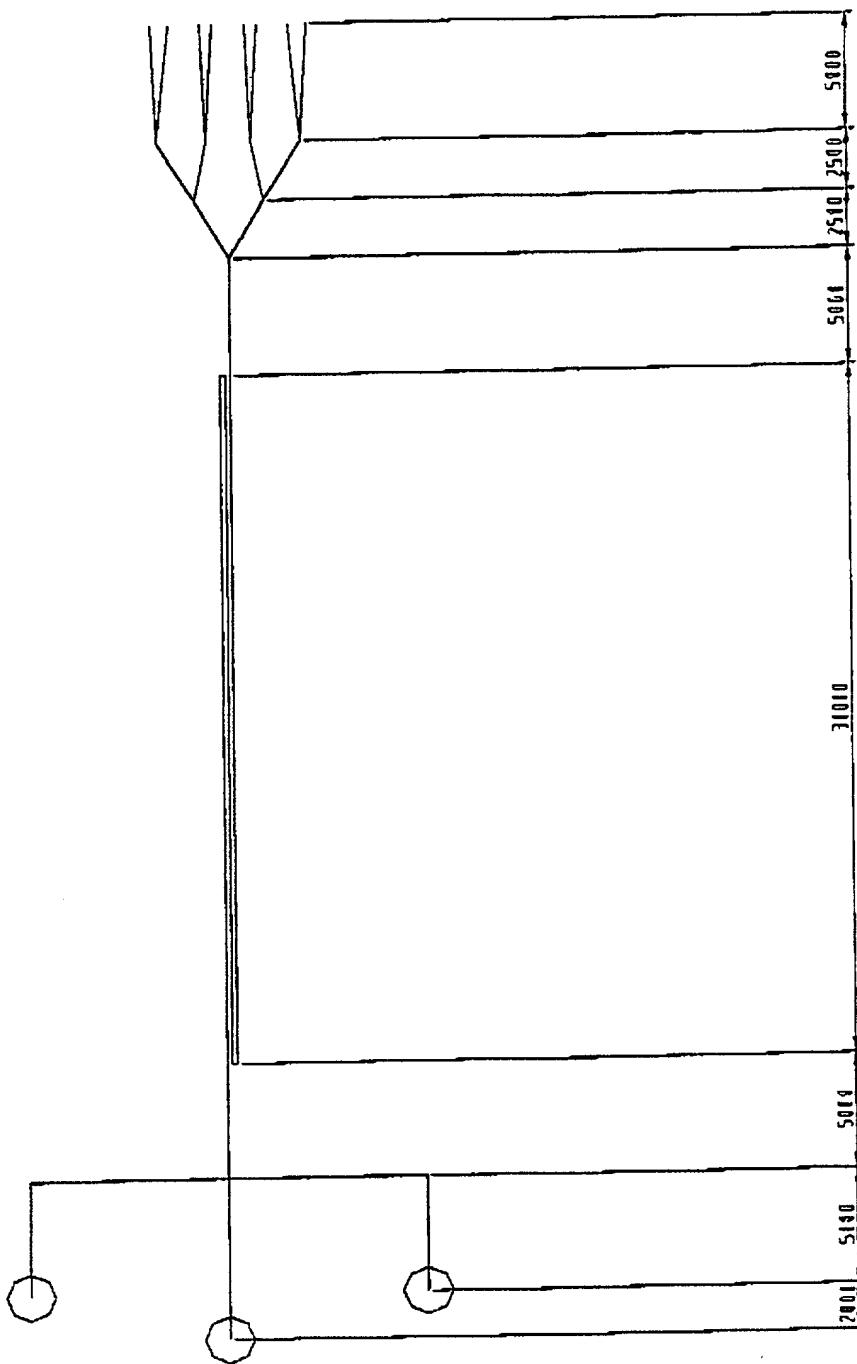
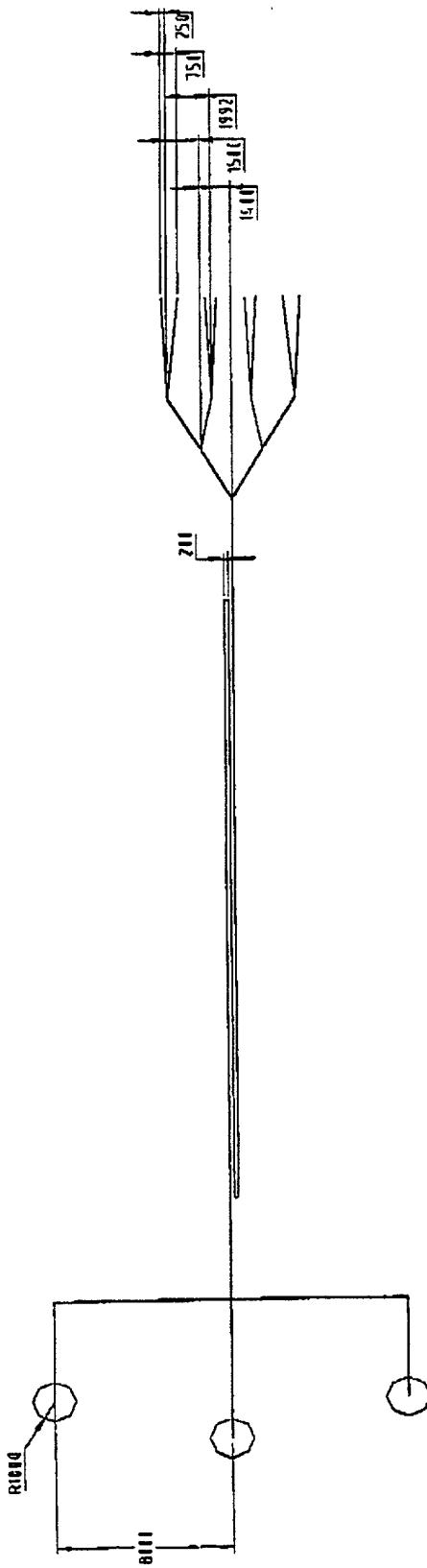


Fig 15(a)

channel width 40 microns for each design

design popl3a by Nils Goedecke 23 June 2001C Department of Chemistry

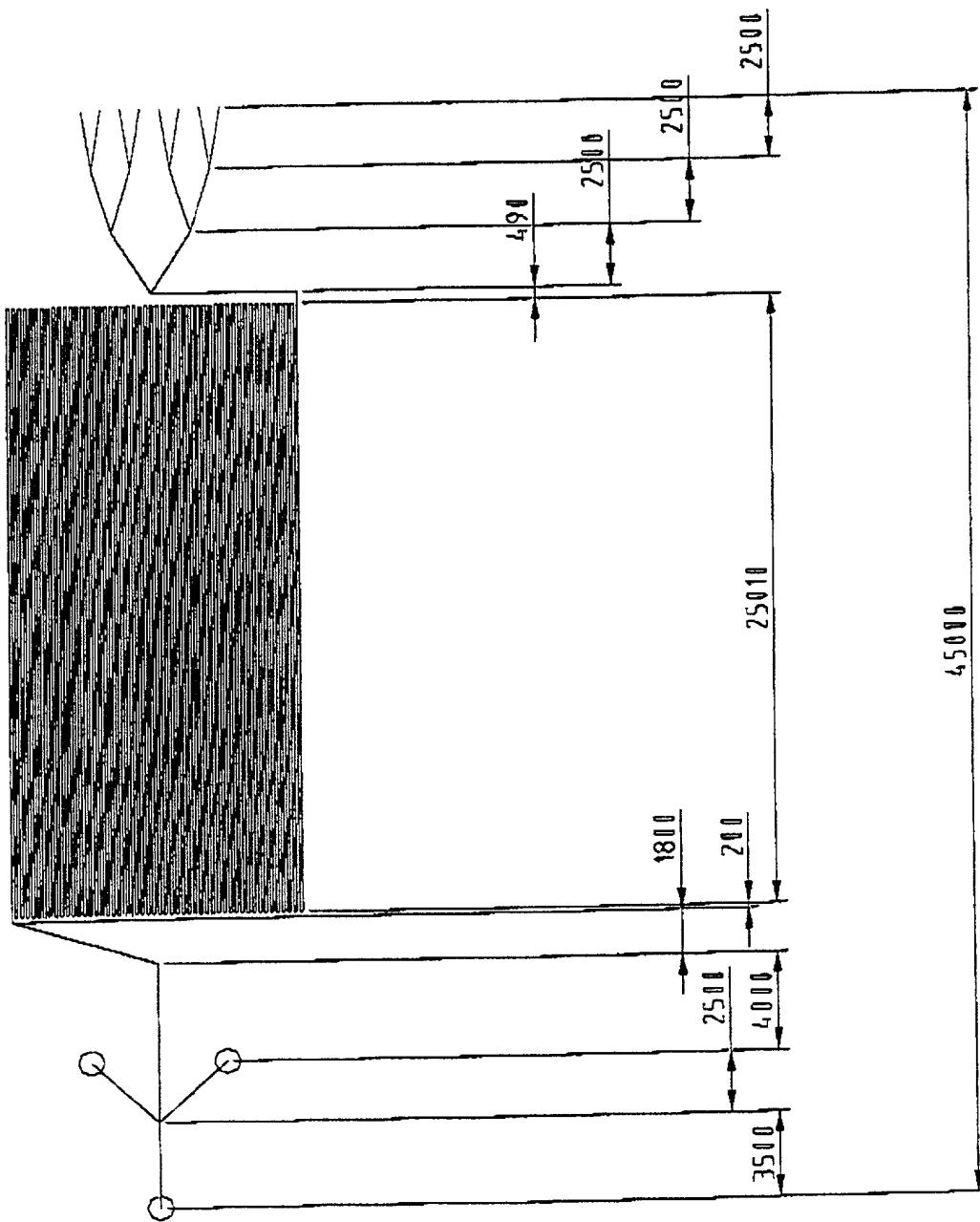
Channel width after etching 60 μ m; depth 10 μ m



channel and microstrains for each design

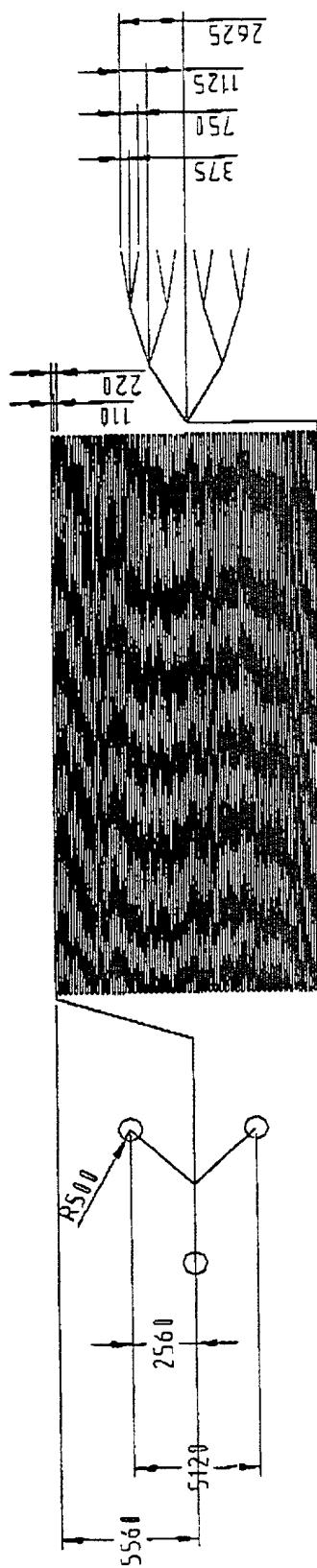
design pop03a by Nils Goedecke 23 June 2010 (C) Department of Chemistry

Fig. 15(b)



Design lwm 01. S1 5, Sep Ch W 10, EVvap Ch W 10 by Nils Goedecke 05.07.2000

Fig. 16(a)



This layout includes the anti-stream-inlet and a 2.5μm separation channel. Theoretically, a channel of this length 10μm wide and 0.1μm deep has an efficiency of more than 500000 theoretical plates in 10 min run time.

Design Num 01. S1.5, Sep Ch W. 11, Evap Ch W.10 by Nils Goedekke 05.07.2000

Fig. 16 (b)

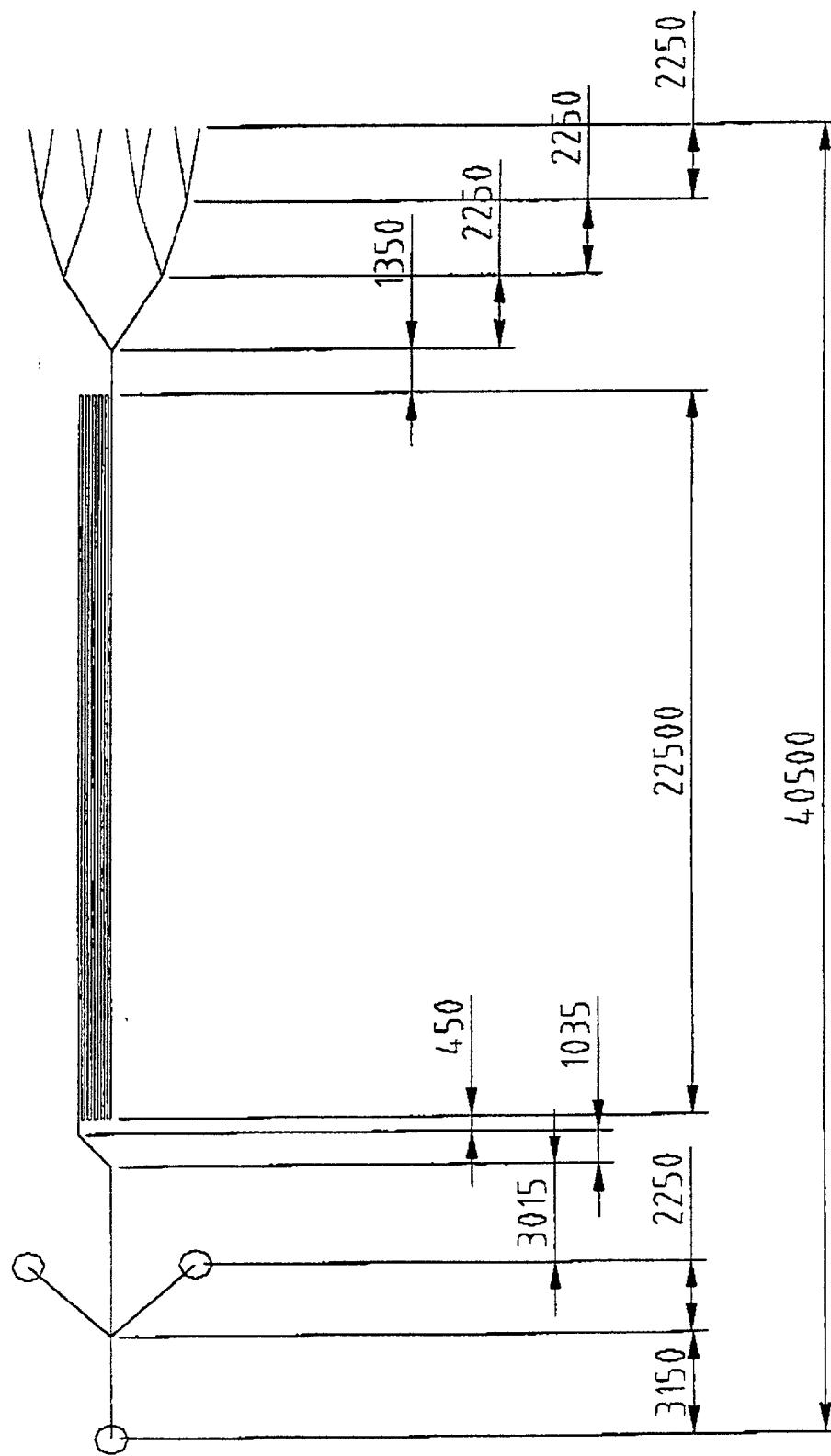


Fig. 17 (a)

Design 112 S 1.5 Sep Ch.W. 10 EVvap Ch.W. 10 by Nils Goedecke 09 11 2000

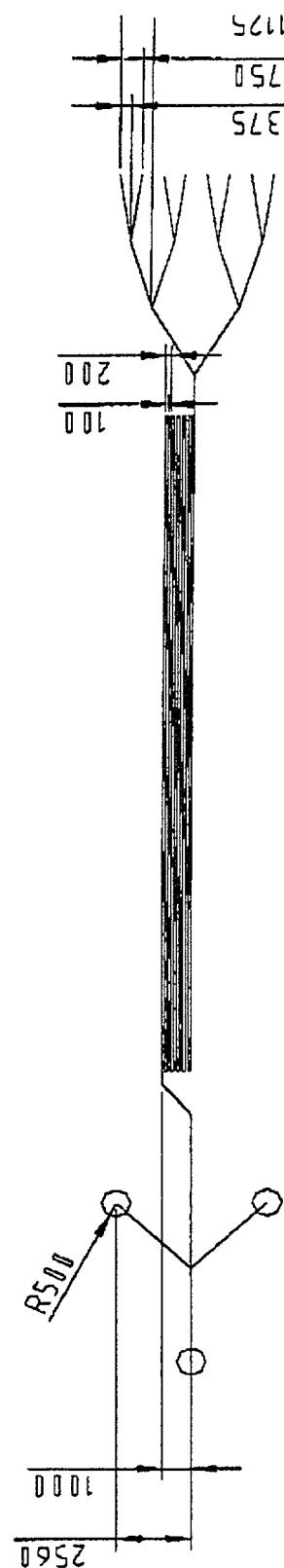


Fig. 17 (b)

Design Num 02 S15 Sep (h)W 10 Evap (h)W 10 by Mls Goedcke 09 11 2000

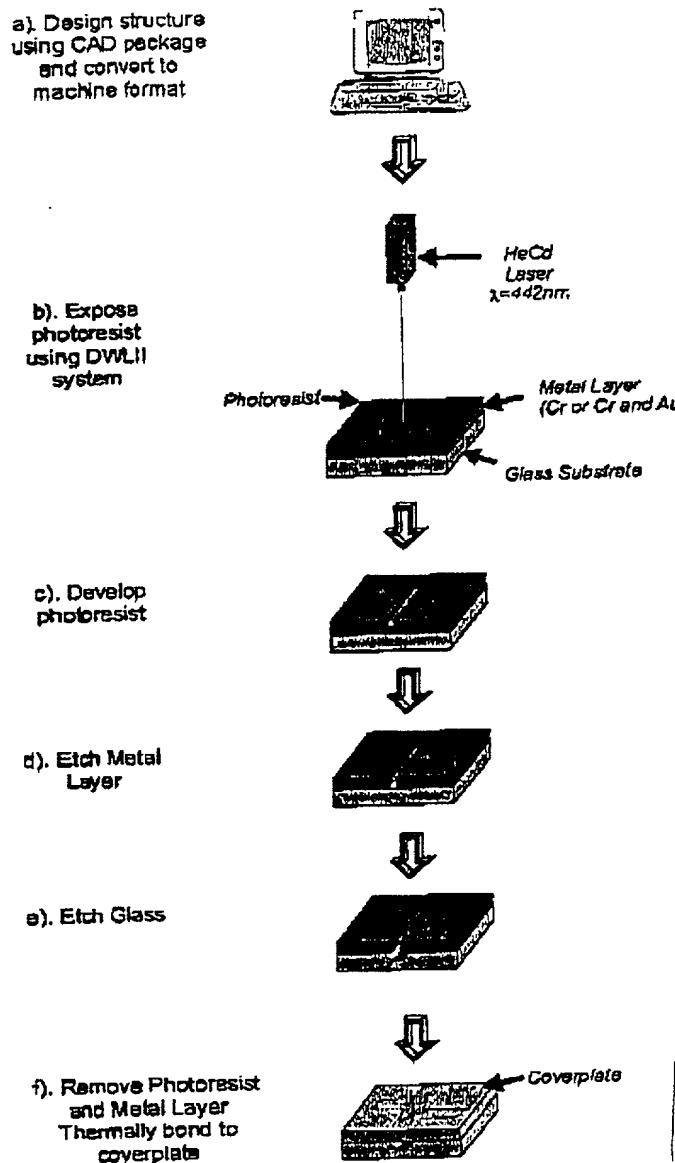
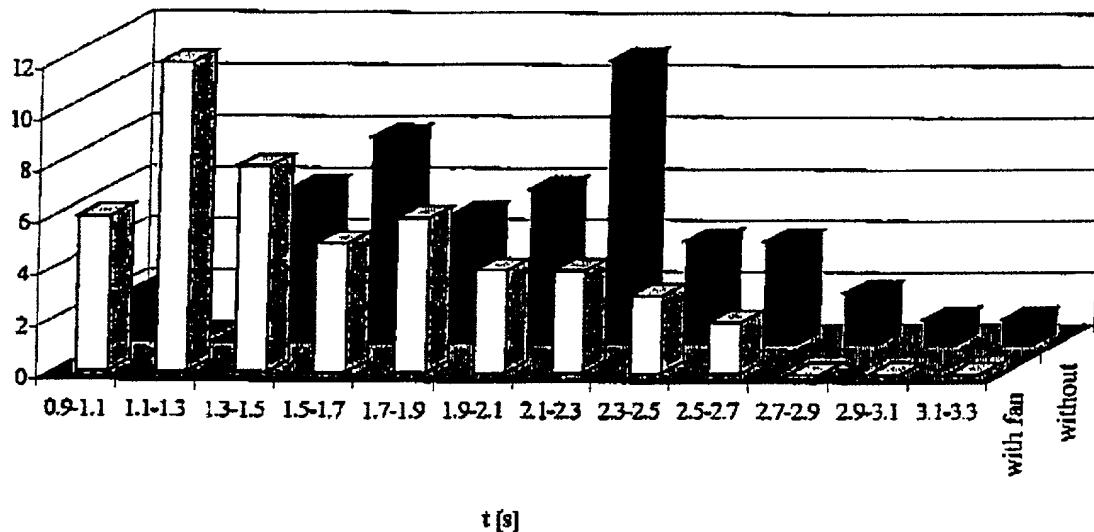


Fig. 18



Velocity differences within the channel (60x20 μm) for 10 μm latex beads in a pop02 chip driven through evaporation with and without "air condition"; measurement with 50 beads each; The average velocity with the "air condition" switched on is slightly higher than without it – visible in the left shift of the profile.

fig. 19